Kansas Department of Health and Environment
Bureau of Environmental Remediation
Identified Sites List Information
Photo Available

Project Code:	C506471298	**Site Status:**	Active
Site Name:	HODGDON POWDER CO, PYRODEX DIVISION POND CLOSURE		
CERCLIS Number:	KSN000704300		
Other Names:			
Address:	ROUTE 2, INDUSTRIAL PARK 67449	**City:**	HERINGTON
County:	MR	**River Basin:**	KS - Lower Republican
Latitude:	38.69414	**Longitude:**	-96.81625
Program Name:	State Cooperative	**Project Manager:**	UNDERWOOD, J.
Contaminants:	Chlorides, SVOC, VOC, Other (see Site Narrative)		

Site Narrative:

The Hodgdon Powder Company, Pyrodex Division (Hodgdon; a.k.a. Pyrodex Facility) - Pond Closure Site is located at the west-central region of the Tri-County Public Airport (TCPA) Site in rural Morris County. From 1976 to the present, Hodgdon has primarily manufactured a substitute for black powder for muzzle loading gun use. The main ingredients of their products include potassium perchlorate, potassium nitrate, sulfur, and charcoal.

Environmental investigations have been conducted at the TCPA since 1994. The investigations have focused on chlorinated solvent (mainly trichloroethylene - TCE) and petroleum contamination not associated with the Hodgdon facility. During an Expanded Site Investigation conducted by EPA in 1998, perchlorate ground water contamination was first detected at the TCPA site. Since that time, perchlorate has emerged as a constituent of concern, due in part to the discovery of widespread perchlorate contamination of public water supplies in California. In February of 2001, as a result of the pending closure of industrial waste water ponds at the facility, KDHE identified perchlorate as a potential contamination issue at the facility.

In April of 2002, KDHE sampled selected TCPA monitoring wells, Hodgdon water drainage into an off-site stream and sediment from the stream. Low levels of perchlorate were detected in the wells and high levels in the sediment and drainage samples. Subsequent KDHE investigations showed high levels of perchlorate in soils from abandoned wastewater ponds, in water from active facility wastewater ponds, in an adjacent livestock pond and in downgradient private wells at low to moderate levels.

In September of 2002, Hodgdon signed a Consent Order with KDHE to conduct a Remedial Investigation (RI) and Feasibility Study (FS). KDHE and Hodgdon held a Public Meeting in September of 2002 to discuss the perchlorate issue and provide perchlorate information to the public. Hodgdon conducted remedial investigation field work from November 2002 to February 2003. In June of 2003, a 1.6 million dollar perchlorate biodegradation treatment system was constructed at the facility to treat and destroy perchlorate in plant wastewater.

Sampling of domestic water wells in the area has identified widespread ground water contamination; the ground water plume extends up to 5 miles downgradient of the facility, is as much as 5 miles wide, and affects at least three bedrock aquifers. Ground water flow direction is generally to the north-northwest. Quarterly ground water sampling of selected on - and off - site monitoring wells and selected residential wells is conducted. Hodgdon provided bottled water to residences with impacted domestic wells until a rural water line was extended to impacted residences in early 2006.

In July 2003, with the assistance of perchlorate research experts from Texas Tech University, KDHE collected additional media samples which included ground water, surface water, terrestrial plants, garden produce and cattle blood sera. KDHE tasked its risk assessment contractor, Tetra Tech EM Inc. (Tetra Tech), to review the blood sera and garden produce data. Tetra Tech, Texas Tech and KDHE concurred that the blood sera data showed no evidence of toxic effects of the perchlorate to cattle. Results for produce samples collected from one home garden in the most contaminated part of the plume indicated concentrations of perchlorate high enough to recommend limiting or even eliminating consumption of produce grown with perchlorate-contaminated water.

KDHE subsequently tasked Tetra Tech to prepare a sampling and analysis plan to conduct a more comprehensive assessment of potential perchlorate exposure related to foodstuffs. In January of 2004, KDHE and Tetra Tech implemented

the sampling plan and collected additional foodstuffs including livestock products, garden produce (frozen) and canned foodstuff samples from selected residences located throughout the ground water plume area.

Since sampling results were difficult to interpret and seemed to produce more questions than answers and due to the significant unknowns regarding the potential toxicity of perchlorate in vegetables, KDHE held a public meeting and recommended that "it is not advisable for residents with known perchlorate impacted ground water to use this water to irrigate garden produce or to consume garden produce grown with ground water containing perchlorate. An alternative water source and garden location should be selected to avoid potential accumulation of perchlorate in soils historically irrigated with contaminated ground water." KDHE will continue to assess the garden produce/ soil concerns and will be better able to evaluate these concerns as the significant unknowns regarding the potential toxicity of perchlorate in vegetables and other media are resolved or are better understood.

During site investigation work, concerns were raised about the possibility of secondary exposure risks posed by perchlorate contamination of ground water and surface water originating from the facility. To investigate this possibility, KDHE collected samples of ground water and surface water in July 2002 through May 2003. The ground water and surface water samples showed a pattern of perchlorate contamination which warranted further assessment of potential secondary exposure routes. KDHE collected additional surface water samples at select locations in 2006 for rebaselining purposes.

The RI showed very high levels of on-site perchlorate contamination in soil, ground water and drainage water. KDHE required that Hodgdon conduct an Interim Remedial Measure (IRM) to begin to reduce soil and ground water contamination. In the spring and summer of 2004, Hodgdon conducted IRM investigation work which included the collection of additional data to further characterize perchlorate contamination in on-site soils for use in assessing potential remedial alternatives, assessment of shallow groundwater characteristics and quality, and assessment of the extent of substantially contaminated groundwater on site and in the site area. Field work activities including soil sampling, monitoring well installation, hydraulic conductivity testing and groundwater sampling. Supplemental characterization data was obtained in January 2006 in support of IRM pilot efforts.

In addition, bench scale testing (laboratory treatability study) of impacted soils with various electron-donors was conducted to evaluate potential bioremediation alternatives. The treatability study was conducted to support the development of an IRM for source soils. The bench-scale results for the biotreatability study suggested that in situ bioremediation is a viable technology for the treatment of perchlorate impacted soils at the site. Subsequently, Hodgdon initiated implementation of a staged full-scale IRM Pilot test for bioremediation of source soil beginning in early 2005. The soil IRM pilot test and reporting was completed in late 2006. The soil IRM will be expanded to address several former land application areas in 2007. Also, Hodgdon conducted groundwater IRM bench-scale testing in 2006 with additional bench-scale testing to be conducted in 2007. Based on surface water sampling results, KDHE required that Hodgdon develop and implement a Stormwater Pollution Prevention Plan for the facility. KDHE will work with Hodgdon on developing an Individual Stormwater Permit for the facility that will satisfy National Pollutant Discharge Elimination System (NPDES) permit requirements. Hodgdon has proposed installation of additional on-site monitoring wells to further evaluate the nature of shallow groundwater conditions. In early spring of 2005, Hodgdon began quarterly monitoring of on-site shallow groundwater and on- and off-site groundwater conditions of the Cresswell and Stovall aquifers. Although the groundwater monitoring program has been slightly modified over time to reflect project needs, periodic on-site and off-site groundwater monitoring continues.

Legal Description:

Township	Range	Section	Parcel	Description
16	06E	06		NW

Actions Completed:

Activity Type	Activity	Start	Completed
PRP IDENTIFICATION/NEGOTIATION	Consent Order		09/12/2002
PUBLIC RELATIONS	Public Meeting		09/18/2002

Actions Underway:

Activity Type	Activity	Start	Completed
INTERIM ACTION	Interim Remedial Measure - source	04/15/2004	

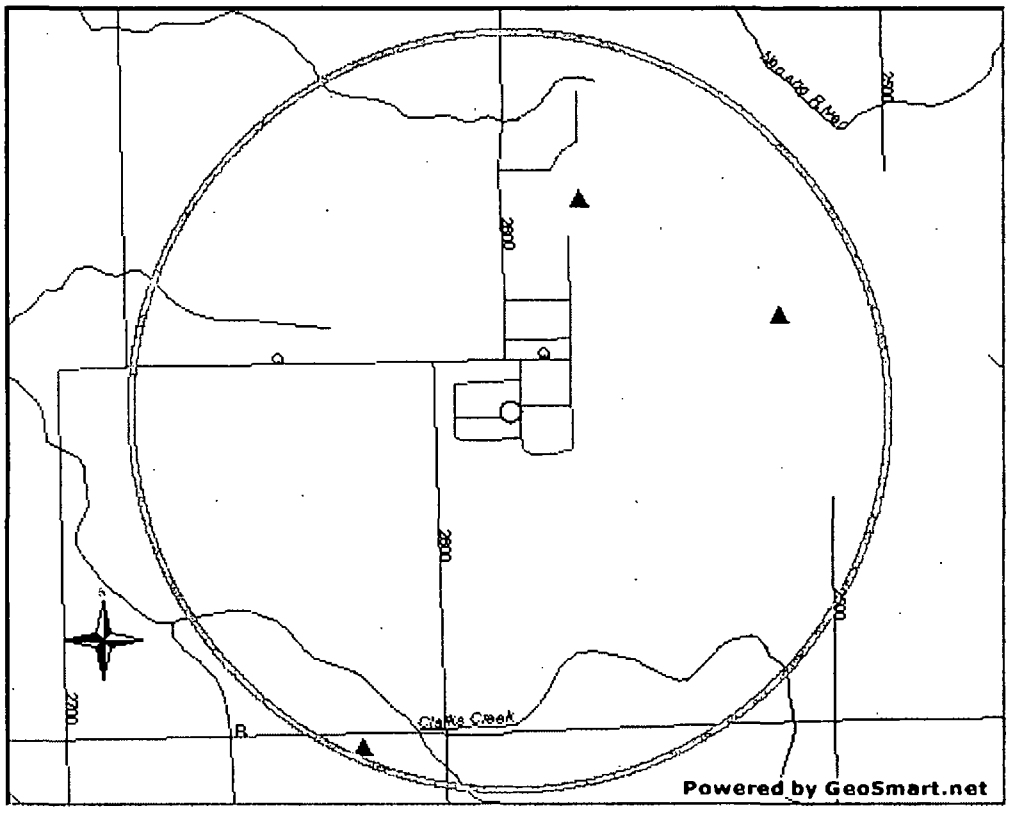
Actions Proposed:

Activity Type	Activity	Start	Completed

Environmental Use Control In Place? No

Map of Identified Site
(One-mile radius circle around selected site)

Click here for interactive map.



Types of Sites in Area

● Selected Site

▲ Active △ Resolved ⚠ Resolved with Restrictions ▲ Transferred out of Bureau